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TWO NEW SPECIES OF *EUPATORIUM* (ASTERACEAE) FROM NUEVO LEON, MEXICO

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ABSTRACT

Two new species belonging to the *Koanophyllon* group of *Eupatorium* are described: *Eupatorium galeanum* B. Turner and *E. hintoniorum* B. Turner. Both occur in pine-oak woodlands in the area southeast of Galeana, Nuevo León. *Eupatorium galeanum* is closely related to *E. reyrobinsonii* B. Turner, and *E. hintoniorum* is closely related to *E. richardsonii* B. Turner. A key to these four taxa is provided, along with a map showing their distribution.

KEY WORDS: Asteraceae, *Eupatorium*, *Koanophyllon*, México

Routine identification of Mexican Asteraceae has revealed two novelties, both of which appear closely related to *Eupatorium reyrobinsonii* and *E. richardsonii*. A key to these several taxa follows:

- 1. Petioles mostly 2-12 mm long.(2)
- 1. Petioles mostly 12-30 mm long.(3)
 - 2. Receptacle pubescent; heads 6-8 mm high. *E. reyrobinsonii*
 - 2. Receptacle glabrous; heads 4-5 mm high. *E. galeanum*
- 3. Leaves cordate to subcordate; achenes hispidulous, not glandular; Nuevo León. *E. hintoniorum*
- 3. Leaves ovate to lance ovate; achenes to some degree glandular pubescent; Tamaulipas, San Luis Potosí, Querétaro, Hidalgo. *E. richardsonii*

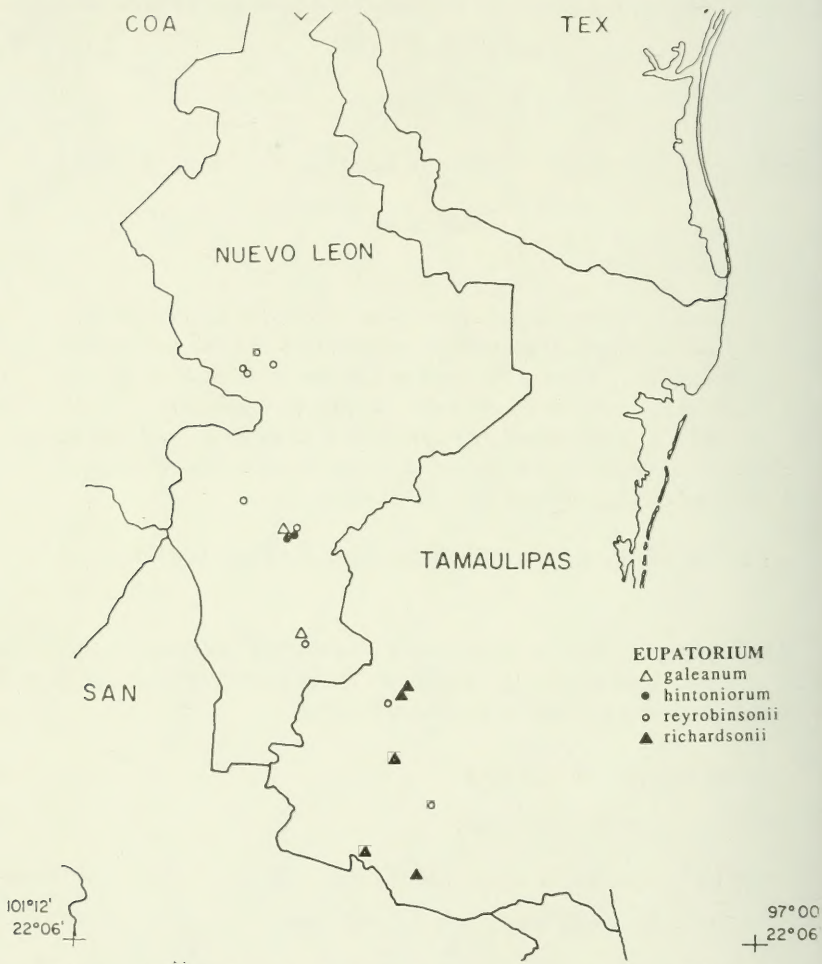


Fig. 1. Distribution of Eupatorium spp. in Nuevo Leon and Tamaulipas.

Eupatorium galeanum B. Turner, *spec. nov.* TYPE: MEXICO. Nuevo León: Mpio. Galeana, Río de San José (ca. 24° 34' N, 99° 50' W), oak woods, 1535 m, 24 Sep 1991, *G.B. Hinton et al.* 21512 (HOLOTYPE: TEX).

Eupatorio reyrobinsonii B. Turner similis sed foliis plerumque cordatis (vs. ovatis), capitulis minoribus (4.5 mm altis vs. 6-8 mm), et receptaculis glabris (vs. pubescentibus) differt.

Erect or somewhat sprawling shrubs or shrublets, 0.6-1.5 m high, stems green, puberulent. Leaves opposite, mostly 4-6 cm long, 2-4 cm wide; petioles 3-7 mm long; blades mostly cordate to subcordate, trinervate from the base, moderately puberulent beneath, the surfaces glandular punctate, the margins serrate. Heads 4-5 mm high, arranged terminal in ascending corymbose panicles, the ultimate peduncles bracteate, mostly 1-4 mm long. Involucres 3-4 mm long, the bracts subimbricate in 2-3 series, stiffly erect, linear-lanceolate, 2-3 nervate, the apices narrowly acute and pungent, not at all scarious. Receptacle somewhat convex, glabrous. Florets ca. 20 per head; corollas greenish white, somewhat tubular, gradually flaring upwards, ca. 2.5 mm long, the tube ca. 0.3 mm long, the lobes atomiferous glandular, broader than long. Anther appendages obtuse, ca. as long as broad. Style branches smooth, markedly oblanceolate or clavate apically. Achenes black, ca. 3 mm long, hispidulous, the pappus of 30-40 barbellate bristles 2.5-3.0 mm long.

ADDITIONAL SPECIMEN EXAMINED: MEXICO. Nuevo León: Mpio. Iturbide, Iturbide to Camarones, pine-oak woods, 1580 m, 6 Sep 1991, *Hinton et al.* 21396 (TEX).

The species is apparently most closely related to *Eupatorium reyrobinsonii* from which it differs in possessing cordate to subcordate leaves (vs. ovate), smaller heads and more markedly nervate, rigid involucre bracts, and glabrous receptacles (vs. pubescent). Both of the only two known collections have been obtained in the same general vicinity, just south of Iturbide, Nuevo León. *Eupatorium reyrobinsonii* is more widespread than *E. galeanum*, but it does occur with or near the latter, having been collected 12.5 km south of Iturbide along a moist stream bed amongst mossy boulders (*Sundberg 1883* [TEX]).

Eupatorium hintoniorum B. Turner, *spec. nov.* TYPE: MEXICO. Nuevo León: Mpio. Arramberri, N of Arramberri, pine woods, 950 m, 30 Nov 1989, *G.B. Hinton et al.* 20037 (HOLOTYPE: TEX).

Eupatorio richardsonii B. Turner similis sed foliis cordatis vel subcordatis (vs. ovatis vel lanceolati-ovatis) et acheniis hispidulis (vs. glandulosi-pubescentibus) differt.

Stiffly erect shrub or shrublet 0.5-1.5 m high. Stems reddish, terete, puberulent. Leaves on primary shoots opposite, mostly 5-8 cm long, 3-5 cm wide; petioles 1-2 cm long; blades decidedly cordate to subcordate with 3 principal nerves arising from the base, minutely puberulent to subglabrous, the undersurfaces markedly glandular punctate, the margins weakly serrate to nearly entire. Heads numerous, arranged in terminal somewhat rounded capitulescences, the ultimate peduncles mostly 1-5 mm long. Involucres mostly 4-5 mm high, the involucral bracts 2-3 seriate, subimbricate, linear-lanceolate, puberulent. Receptacle plane, sparsely pubescent. Florets 10-12 per head, the corollas 4-5 mm long, yellowish-white, narrowly funnelform, the tube grading into the throat, the lobes ca. 0.25 mm long. Anther appendages obtuse, ca. as long as wide. Style branches linear. Achenes ca. 3 mm long, 4-5 ribbed, sparsely hispidulous, the pappus of 25-30 tawny or purplish barbellate bristles ca. 4 mm long.

ADDITIONAL SPECIMENS EXAMINED: MEXICO. Nuevo León: Mpio. Galeana: La Poza to Río de San José, 1775 m, 1 Nov 1991, *Hinton et al.* 21745 (TEX), 21749 (TEX). Mpio. Iturbide: Iturbide to Camarones, pine-oak woods, 1580 m, 6 Sep 1991, *Hinton et al.* 21657 (TEX).

The relatively thick, markedly cordate to subcordate leaves and hispidulous achenes readily distinguish this taxon from its closest relative, *Eupatorium richardsonii*, which has ovate to lanceolate ovate leaves and glandular pubescent achenes.

Five separate collections of this species have been made, all by the Hinton (Jaime and George, son and grandson of the early Mexican collector G.B. Hinton). The specimens were obtained from both calcareous and gypseous soils in the canyons along secondary roads between Iturbide and Arramberri, Nuevo León.

ACKNOWLEDGMENTS

I am grateful to Guy Nesom for the Latin diagnoses and to him and Carol Todzia for reviewing the manuscript.

THE REDISCOVERY OF *RHYNCHOSPORA SOLITARIA* HARPER (CYPERACEAE) IN GEORGIA

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ABSTRACT

Rhynchospora solitaria was previously known only from three Harper collections (in 1900, 1902, and 1953), the two earliest collections from the type locality in south Georgia. It has recently been discovered at a new site in Turner County, Georgia. A key to the species is provided, and collection and habitat data are given, and compared to the existing literature.

KEY WORDS: *Rhynchospora solitaria*, Cyperaceae, Georgia, seepage herb bogs

Rhynchospora solitaria Harper (section *Eurhynchospora*) was first collected by Roland M. Harper (*Harper 668*, Sept. 1900, TYPE: NY; Isotype: GH), in moist pine barrens near Tifton, Berrien County, Georgia (Harper 1901; Gale 1944). This locality is now in Tift County, which was created from Berrien County after 1900. Harper (1901) noted *R. solitaria* to be an inconspicuous plant, growing scattered among grasses with *Burmannia capitata* (Walt.) Mart. and *Sarracenia psittacina* Michx. Among the other species Harper collected at this site on this date was the type specimen of *Baldwinia* (= *Balduina*) *atropurpurea* Harper (Harper 1901). He also collected *Sarracenia flava* L. and *Oxypolis ternata* (Nutt.) Heller from this site. Two years later, he returned to

the type locality at Tifton and made another collection (Harper 1677, Sept. 26, 1902 [US,GH]) of *R. solitaria* (Harper 1904). He also notes having seen this sedge in the south Georgia counties of Colquitt and Irwin (Harper 1904, 1967). Both of these counties are adjacent to Tift County. Apparently Harper did not collect voucher specimens from these Georgia counties (Gale 1944). Later, on August 4, 1953, when he revisited the type locality at Tifton, he found the site to be a tangle of kudzu, but he noted having collected *R. solitaria* about five miles southwest of the type locality (apparently in Tift County) on the same day (Harper 1967).

According to the literature, no other collections of *Rhynchospora solitaria* have been made (Gale 1944; Godfrey & Wooten 1979; Kukenthal 1950). The type locality was threatened with destruction as early as 1902 (Harper 1904, p. 15), but since Harper (1904, p. 15) noted having seen this species in additional counties, there existed the possibility that it might be rediscovered from some previously unrecorded location. During a recent trip with Mr. Wilson Baker, the authors discovered *R. solitaria* in Turner County, which lies immediately north of Tift County, in southern Georgia. The collection data are as follows:

Rhynchospora solitaria Harper (Cyperaceae). UNITED STATES.

Georgia: Turner Co.: Hillside seepage bogs above small impoundment on N side of paved county road (S1531; Co. Rd. 249) connecting US 41 and GA 33, ca. 2.5 mi NW of jct. with US 41 at a point ca. 1.0 mi N of center of Ashburn, at head of tributary to West Fork Deep Creek; Ashburn 7.5' Quad.; 31° 43' 54" N, 83° 42' 09" W; Elev. 410-420 ft.; 12 Oct 1991, Orzell, Bridges, & Baker 18383 (GA,MO,NCU,NY,TEX).

Rhynchospora solitaria occurs scattered within the graminoid matrix of lower slope hillside seepage herb bogs or streamhead seepage bogs at the collecting site. These seepage bogs are presently being maintained by periodic prescribed burning of the surrounding gently rolling upland savanna dominated by mature longleaf pine (*Pinus palustris* P. Mill.). We observed *R. solitaria* at two nearby seepage herb bogs but did not locate the plant in other seepage bogs in the vicinity. The solitary slender culms (up to 5-6 dm tall), flat basal leaves, short upper leaves, solitary terminal inflorescence, and narrow spikelets are distinctive features (Harper 1901) of this late autumnal flowering sedge. It appears most closely related to *R. ciliaris* (Michx.) C. Mohr and *R. baldwinii* A. Gray, both of which have stouter culms and broader spikelets. The following key can be substituted at couplets 19 and 20 in the *Rhynchospora* key of Godfrey & Wooten (1979) in order to distinguish *R. solitaria* from similar species:

19. Perianth bristles 12, stout, mostly longer than the achene body.
 *R. baldwinii* A. Gray
19. Perianth bristles 3-6, delicate, mostly shorter than the achene body. 20
20. Leaves with blunt, shortly tapering tips, the largest 2.5-6.0 mm wide and linear-elliptic; inflorescence typically a solitary, terminal, unbranched turbinate fascicle.A
20. Leaves with long tapering tips, generally less than 2 mm wide, long filiform; inflorescence various (solitary, branched, or multiple). .21
- A. Basal leaves 4-6 mm wide, forming a rosette; culms stiffly erect; spikelets elliptic; midribs of the floral scales conspicuously ciliate, not aristate; bristles 6, less than half the length of the achene body.
 *R. ciliaris* (Michx.) C. Mohr
- A. Largest leaves 2.5-3.0 mm wide, widely spaced on a slender delicate culm, not forming a basal rosette; spikelets narrowly lanceolate; midribs of the floral scales smooth, extending into an aristate tip; bristles 3-4, very fragile, at least some equaling or exceeding the achene in length.
 *R. solitaria* Harper

At the time that our collections were made, *Rhynchospora solitaria* was in early flowering and fruiting condition, while many of the other species of *Rhynchospora* in the bog (i.e., *R. macra* [Clarke] Small) were in late fruiting condition, many with shattering spikelets. Associates of *R. solitaria* at the Turner County site include *Aristida virgata* Trin., *Balduina atropurpurea*, *Bigelovia nudata* (Michx.) DC., *Burmannia capitata*, *Coreposia linifolia* Nutt., *Eriocaulon decangulare* L., *Eriocaulon texense* Körn., *Eryngium ludovicianum* Morong (<*Eryngium integrifolium* Walt.), *Juncus trigonocarpus* Steud., *Liatris spicata* (L.) Willd., *Lobelia glandulosa* Walt., *Lophiola aurea* Ker-Gawl., *Marshallia tenuifolia* Raf., *Muhlenbergia expansa* (Poir.) Trin., *Oxypolis filiformis* (Walt.) Britt., *O. ternata*, *Pycnanthemum nudum* Nutt., *Rhexia lutea* Walt., *Rhexia petiolata* Walt., *Rhynchospora chalarocephala* Fern. & Gale, *Rhynchospora macra*, *Rhynchospora oligantha* A. Gray, *Sabatia macrophylla* Hook., *Sarracenia flava*, *Sarracenia minor* Walt., *Sarracenia psittacina*, *Scleria reticularis* Michx., *Tofieldia racemosa* (Walt.) B.S.P., *Xyris baldwiniana* Schultes, *X. drummondii* Malme. Many of these associates (*Balduina atropurpurea*, *Eriocaulon texense*, *Oxypolis ternata*, *Sarracenia flava*, and *Sarracenia psittacina*) are on the Georgia Natural Heritage Program 1990 list of special plants. *Xyris drummondii* is currently a federal category 2 plant under review for possible federal listing (Federal Register 55(35):6184-6229. 1990).

Fire maintained examples of upland longleaf pine savanna and associated seepage herb bogs have become an increasingly rare feature on the Tifton

Upland of southcentral Georgia. We suspect that with additional searches, *Rhynchospora solitaria* may be located at other remaining seepage herb bogs in southern Georgia counties.

ACKNOWLEDGMENTS

We greatly appreciate an invitation to visit the site extended to us from Mr. Wilson Baker. Without his previous knowledge of the location of seepage bogs at the site and his willingness to make arrangements for our visit, we would not have rediscovered this sedge. We extend our sincere appreciation to Mr. Marvin Ward, the property owner, and Mr. Glen Jones, the manager, for allowing us to conduct field surveys at the site. Thanks to Dr. Guy Nesom and Dr. Carol Todzia of TEX for their critical review of the manuscript.

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A REVISED SYNOPSIS OF THE PINES 4: THE CHIHUAHUA PINE (*PINUS*, SECTION *LEIOPHYLLA*)

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ABSTRACT

Another unique pine is *Pinus leiophylla* which constitutes by itself one section, section *Leiophylla* due to a combination of four characteristics: the strobiling time is in July (i.e., late for a southern pine species); 2) the species spends two years and a half to mature its fruits; 3) a dense coppice growth of fast growing shoots often emerge from cut trunks; 4) its geographic distribution is continental.

KEY WORDS: *Pinus*, Pinaceae, systematics

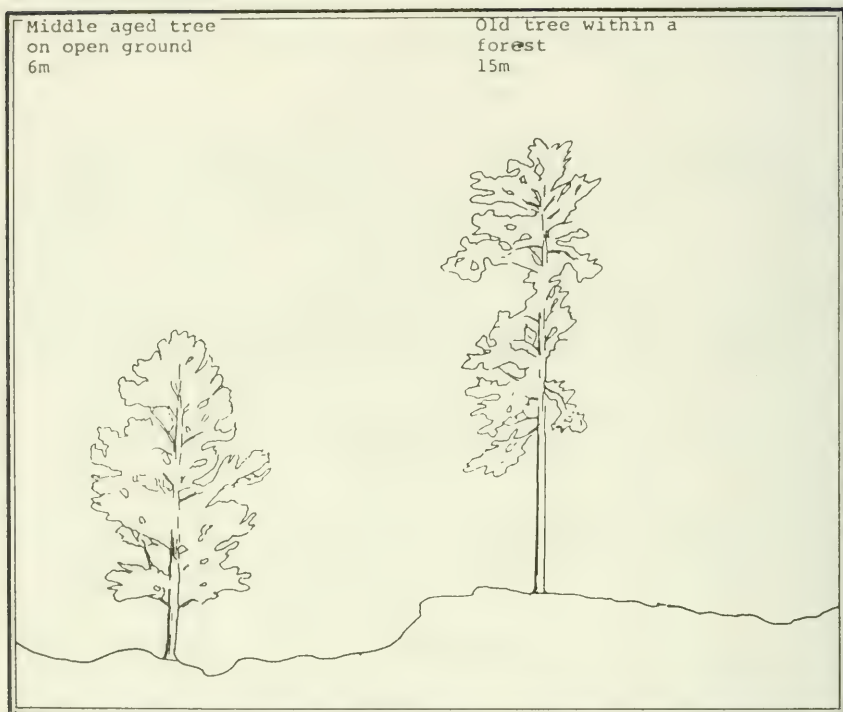
INTRODUCTION

This short paper treats *Pinus leiophylla* Schiede & Deppe and complements a previous paper (Landry 1989) wherein were reported important features of the Parasol Pine (*Pinus pinea* L.), the other pine (in addition to *P. leiophylla*) which spends at least two years and a quarter to grow and mature its cones.

SUBGENUS *PINEA*: PRACTICAL DIAGNOSTIC KEY TO THE SECTIONS, BASED ON CONE AND SEED CHARACTERS

Closed cones slightly fatter than eggs, applelike. Midcone seeds with very short, ineffective, caducous wing which stays stuck to the cone scale; said wing shorter than the seed body. section *Pinea*.

Closed cones narrower than eggs, rather conic. Midcone seeds with a long, effective, articulate wing, about 3 times longer than the seed body. ...
..... section *Leiophylla*.



Outline of *Pinus leiophylla*. Left: after Kearney et al. (1942, p.63).
Right: after Loock (1950, p.127).

The cones of *Pinus pinea* are often hard to find on the ground under the trees because they are picked up for their delicious seeds. I therefore furnish a second key based on the characters of the tree silhouette and the needles.

SUBGENUS *PINEA*: PRACTICAL SILHOUETTE AND NEEDLE KEY TO THE SAME SECTIONS

- Old trees with a dense parasol silhouette. Needles binate (by 2).
.....section *Pinea*
- Old trees with light looking cylindrical or conical silhouette. Needles binate
(by 2) to quinate (by 5).section *Leiophylla*

FORMAL NAMES OF SECTION *LEIOPHYLLA* AND SUBSECTION *LEIOPHYLLAE* EMEND.

Following are citations of the first publications:

- Section *Leiophylla* Van der Burgh, Rev. Palaeobot. Palynol. 15:92. 1973.
Comprises only *Pinus leiophylla* Schiede & Deppe, monotypic.
- Subsection *Leiophyllae* Loudon, Arb. Frut. Brit. 2273. 1838. Emend. Now
comprises only *Pinus leiophylla* Schiede & Deppe, monotypic.

NOTE ON THE DENDROLOGY OF *PINUS LEIOPHYLLA*

There are two varieties of the Chihuahua Pine, keyed according to the authoritative observations of Loock (1950, p. 121 and 125). Here is a key to them:

- A stable number of needles per fascicle: 5. Cones dull, and yellowish brown
when fresh. *Pinus leiophylla* var. *leiophylla*
- A variable number of needles per fascicle: 2 to 5, often 3. Cones slightly
shining, and dark brown when fresh. *Pinus leiophylla* var. *chihuahuana*

COMMENTARY ON FOUR BEHAVIORAL "ACTIONS" OF *PINUS LEIOPHYLLA*

In addition to many clear (without overlapping) morphological differences between *Pinus leiophylla* and *P. pinea*, here are four major behavioral "actions" of *Pinus leiophylla* that differ from those of *Pinus pinea*:

1. The strobiling (*i.e.*, the production of the strobiles, wrongly called "flowers") occurs in July, while that of *Pinus pinea* occurs during May or June. Peattie (1980, p. 77) specifies that the strobiles, "unlike those of most other pines, do not appear until July." Such a date is exceptional for a pine species living south of latitude 35 degrees.
2. According to Loock (1950, p. 121 and 125) the cones of *Pinus leiophylla* "ripen from January onwards, retaining the seeds for some time," signifying that the total period of fruit gestation from the strobile stadium is two years and a half, compared to two years and a quarter for *Pinus pinea*. That is a record duration of fruit growth for the genus *Pinus* and perhaps for the plant kingdom. What kind of divine "light" did such a feat?
3. Shaw (1909, p. 14) reported that "when a tree is felled, the stump in a few years becomes completely concealed by the numerous shoots that grow from it." Such a phenomenon seems unique in the genus *Pinus*. Small sprouts may be seen growing sometimes on the living trunks of a few other pine species (*Pinus rigida* Mill., for example) but it is the dense regeneration from cut stumps that is marvelously spectacular. Stump sprouting constitutes an antideforestation factor of great importance. We know that the human being may tend to exploit the forests and leave them bare. With *Pinus leiophylla*, that psychological tendency could be partly counteracted. It is therefore recommended to create plantations of Chihuahua Pines on sites where the land is not otherwise used and where such a xerophilous species can thrive.
4. A glance at the precious map of Critchfield & Little (1966, p. 54) shows the continental distribution of *Pinus leiophylla* from Arizona to Oaxaca, mainly on the Sierra Madre Occidental. It is barred southeasterly by the low country of the Istmo de Tehuantepec. On the other face of the coin, *Pinus pinea* is very maritime.

RECOGNITION

I would like to thank Elbert L. Little, Jr., for his great contribution to the progress of North American dendrology, notably his monumental mapping realizations. Warm thanks to Messrs. W.J. Cody and J. Cayouette who by their suggestions have improved the quality of this short note.

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A NEW SPECIES OF *ZIGADENUS* (LILIACEAE) FROM EASTERN MEXICO

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ABSTRACT

A new species, *Zigadenus hintoniorum* B. Turner, is described from the Sierra Madre Oriental of eastern México. It is relatively common on Cerro Potosí, Nuevo León, from 2800-3800 meters. Previous workers have included these more eastern populations in *Z. virescens*, a less robust, smaller flowered species of the Sierra Madre Occidental. A key to the Mexican species of *Zigadenus* and a map showing the distribution of *Z. hintoniorum* in northeastern México are provided.

KEY WORDS: Liliaceae, *Zigadenus*, México

Routine identification of collections from northeastern México has revealed the following novelty.

Zigadenus hintoniorum B. Turner, *sp. nov.* TYPE: MEXICO. Nuevo León: Mpio. Galeana, Cerro Potosí, pine forest, 3700 m, 20 Jul 1969, George B. Hinton *et al.* 17200 (HOLOTYPE: TEX).

Zigadenus virescenti (Kunth) Macbr. *similis sed robustioribus* (0.4-2.0 m altis), *tepals majoribus, et bracteis inflorescentiae valde evolutis differt.*

Robust herbs to 2 m high. Bulbs large ovoid, mostly 3-5 cm long. Leaves mostly 8-18 mm wide. Inflorescence a rather simple elongate raceme 30-40 cm long, often a few secondary branches arising at the base. Pedicels stout, when fully flowered mostly 10-20 mm long, the subtending green bracts mostly large, one half or more as long as the pedicels. Tepals reportedly "greenish-yellow," "creamy-yellow," "creamy-white," or "white with green lines," these mostly elliptic oblong to oblong, 5-7 mm long, (2.0-)2.5-3.5 mm wide. Stamens with

filaments mostly 5-7 mm long, the anthers only slightly exerted beyond the tepals. Capsule 12-15 mm long, 5-7 mm wide.

ADDITIONAL SPECIMENS EXAMINED: MEXICO. Coahuila: Sierra Los Camargos, 2840 m, 19 Jul 1980, *Hinton et al. 17880* (TEX); Sierra del Coahuilón, 3260 m, 30 Jun 1985, *Hinton et al. 18897* (TEX); Sierra Zapaliname, 2985 m, 9 Aug 1991, *Hinton et al. 20501* (TEX); Sierra La Marta, ca. 3589 m, 16 Jun 1985, *McDonald 1439* (TEX); Sierra Coahuilón, 3400-3500 m, 18 Jun 1985, *McDonald 1522* (TEX); Sierra La Marta, ca. 3600 m, 21 Jul 1985, *McDonald 1718* (TEX); Sierra La Viga, ca. 3700 m, 22 Aug 1985, *McDonald 2118* (TEX). Nuevo León: Mpio. Galeana, Cerro Potosí, ca. 3020 m, 25 Jun 1990, *Beaman 3304* (TEX); Cerro Potosí, ca. 3000 m, 27 Aug 1987, *Bogler 177* (TEX); Cerro Potosí, ca. 3500 m, 19 Jun 1966, *Gilbert 51* (TEX); Cerro Potosí, 3700 m, 6 Jul 1969, *Hinton et al. 17150* (TEX); San José Las Joyas, 2780 m, *Hinton et al. 18580* (TEX); Mpio. Aramberri, Cerro Grande, 3800 m, 14 Sep 1986, *Hinton et al. 19047* (TEX); Cerro Potosí, 2 mi below summit by road, 23 Aug 1984, *Lavin 4792* (TEX).

Zigadenus hintoniorum belongs to the section *Anticlea* of *Zigadenus* as treated by Preece (1956). He recognized three species of this section as occurring in North America south of the U.S.A. border. They are *Z. volcanicus* Benth. (from Guatemala), *Z. elegans* Pursh (including *Z. gracilentus* E. Greene and *Z. mohinorensis* Greenm.), and *Z. virescens* (including *Z. mexicanus* Hemsl.). All of the material which I have referred to *Z. hintoniorum* was placed by Preece in *Z. virescens*. However, he noted that most of the material from eastern México resembles *Z. volcanicus* in having thick pedicels. "The flower, however, is nodding like typical *virescens*. More investigation is necessary to clarify their status." Abundant recent collections of *Zigadenus* from the higher peaks of the Sierra Madre Oriental of eastern Coahuila and southern Nuevo León has convinced me that these plants are readily separable by the combination of key characters given below, and that these populations tend to stand somewhere between *Z. virescens* of western México and *Z. volcanicus* of Guatemala.

Preece (1956) thought the type of *Zigadenus virescens* was from the state of San Luis Potosí, but as noted by McVaugh (1989), it is actually from western México in the state of Guanajuato. Preece did examine a few sheets of what he took to be *Z. virescens* from the state of San Luis Potosí collected by Schaffner, and these are probably referable to *Z. hintoniorum* of the present treatment. This would also apply to the few sheets he cited as occurring in the state of Tamaulipas and those from Cerro San Felipe of northern Oaxaca.

Additional collections from eastern México brought to the fore since the study by Preece include also the following: Hidalgo: Depto. Hidalgo, 7000 ft., *Case et al. 323* (TEX) this specimen appears to be *Zigadenus virescens* but it is apparently an aberrant form of *Z. hintoniorum*; in fact, the plant concerned might be a cultivar or introduction from elsewhere since it was found "around



Fig. 1. Distribution of *Zigadenus hintoniorum* in NE Mexico

an old abandoned rock house." Oaxaca: 2.7 mi S of Llano de las Flores, ca. 56 mi N of Cd. Oaxaca along the road to Tuxtepec, B. Turner 15187 (TEX) this plant appears to be typical of *Z. hintoniorum* and presumably would match the sheets from Oaxaca cited by Preece, all of these from an area north of Cd. Oaxaca.

I have mapped in Figure 1 only those specimens from northeastern México on file at TEX. As noted in the above, collections of this taxon have presumably also been made in the states of Tamaulipas, San Luis Potosí, Hidalgo, and Oaxaca, to judge from the citations of Preece.

In summary, *Zigadenus virescens* appears to be largely restricted to the mountainous areas of western México, extending northward into the western U.S.A.; *Z. elegans* is largely a Rocky Mountain element of the western U.S.A. and Canada, extending into northcentral México; *Z. hintoniorum* appears to be largely restricted to montane areas of eastern México from central Nuevo León southward to Oaxaca. These several taxa, all belonging to the section *Anticlea* can be distinguished by the following key.

KEY TO MEXICAN AND GUATEMALAN SPECIES OF *ZIGADENUS*, SECT. *ANTICLEA*

1. Tepals at anthesis 14-15 mm long; Guatemala. *Z. volcanicus*
1. Tepals at anthesis 4-10 mm long. (2)
 2. Flowers at anthesis mostly borne on short erect pedicels; Sonora, Chihuahua, Coahuila, northern Durango. *Z. elegans*
 2. Flowers at anthesis mostly borne on reflexed or recurved pedicels; widespread. (3)
3. Tepals mostly 1.5-2.5 mm wide; bracts of the inflorescence mostly 1/4 or less as long as the subtended pedicels; western México. ... *Z. virescens*
3. Tepals mostly 3.0-3.5 mm wide; bracts mostly 1/2 or more as long as the subtended pedicels; northeastern México southward to Oaxaca.
..... *Z. hintoniorum*

ACKNOWLEDGMENTS

I am grateful to Guy Nesom for the Latin diagnosis and to him and T.P. Ramamoorthy for reviewing the manuscript.

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Doctoral dissertation, Washington State Univ., Pullman, Washington.

**GLANDULARIA TURNERI (VERBENACEAE), A NEW SPECIES FROM
NORTHEASTERN MEXICO**

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ABSTRACT

Glandularia turneri sp. nov. is described from high peaks of Coahuila (Sierra Coahuilón) and Nuevo León (Cerro Potosí), México. It is most similar to another Mexican species, *G. elegans*, but differs in its purplish stems, glabrous or glabrate stems and leaves, thicker leaves with linear divisions, and longer corollas. *Glandularia elegans* is a variable species, but the formal recognition of varieties within it cannot be justified. A key and distribution maps are provided for the two species.

KEY WORDS: *Glandularia*, Verbenaceae, México

Curation of the Verbenaceae at LL,TEX has revealed the presence of the following, previously undescribed species.

Glandularia turneri Nesom, sp. nov. TYPE: MEXICO. Nuevo León: [Mpio. Galeana], 2 mi down from summit of Cerro Potosí, 16 mi up microondas road from 18 de Marzo, NW of Galeana, *Pinus-Abies-Symphoricarpos*, subalpine vegetation, 23 Aug 1984, M. Lavin 4800 (HOLOTYPE: TEX!; Isotype: MEXU!).

Glandulariae eleganti (Kunth) Umber similis sed caulibus purpurascentibus, vestimento glabri vel subglabri, foliis aliquantum carnosus lobis linearibus, et corollis brevioribus differt.

Perennial herbs, the branches decumbent to ascending erect, 1-3 dm long, rooting at the lower nodes, usually purplish, sparsely pilose-hirsute, eglandular. Leaves somewhat thickened with obscurely punctate lower surfaces, glabrous to glabrate, usually with a few appressed-ascending hairs, bipinnatifid, the primary segments 1-2 mm wide, linear to linear oblanceolate, the blade mostly

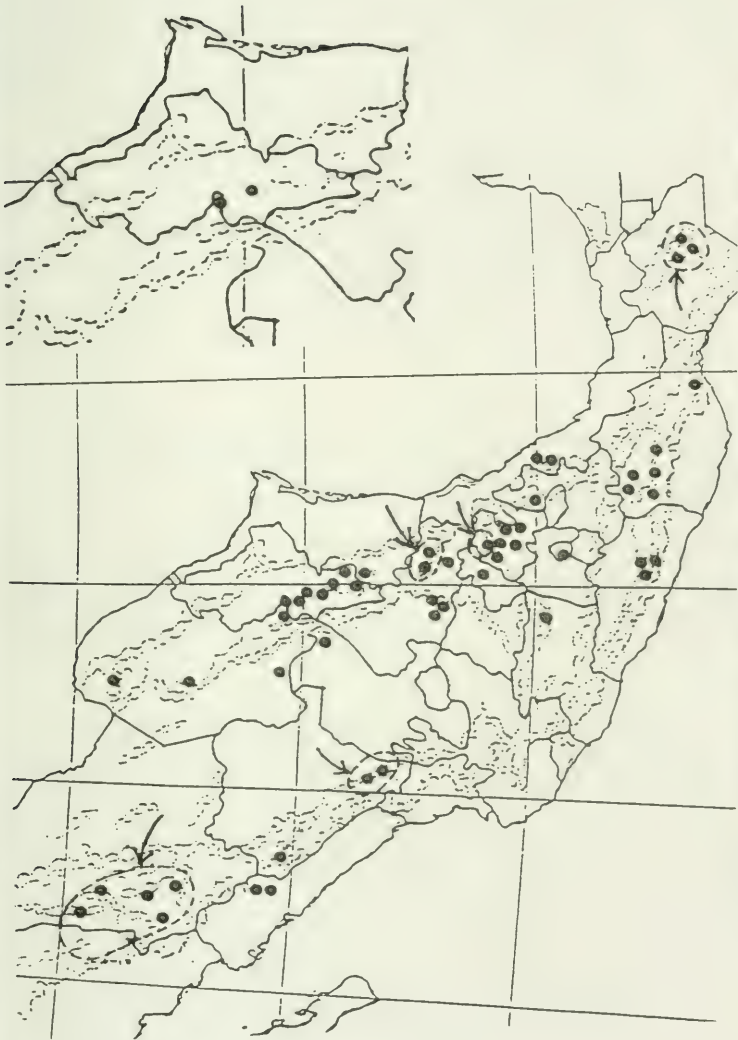
deltate in outline, ca. as long as wide, (15-)25-45 mm wide across the lowermost segments. Inflorescence terminal, with (10-)20-45 flowers, densely compact, 10-25 mm long, elongating but slightly at maturity; calyces and floral bracts with purple capitate glands, moderately hirsute-pilose; floral bracts ovate to linear lanceolate, 4-5 mm long, with ciliate margins; calyces 7-9 mm long, including the linear-lanceolate lobes 1-2 mm long, the lobes or the whole upper half purplish. Corollas rotate, 7-10 mm wide across the expanded petals, purple, the tube sparsely puberulent to glabrous, 9-10 mm long, 1-4 mm longer than the calyx, the throat densely short fimbriolate, the lower tube (inside) densely invested with long, white, retrorsely oriented hairs; stigma and style included, 2 stamens barely exerted, 2 at midtube. Nutlets cylindrical, not basally expanded, 2.8-3.5 mm long, reticulate-rugose, blackish brown at maturity, commissural faces mostly smooth, ca. 2/3 the width of the nutlets, the apex of the commissure rounded and well below the nutlet apex.

Coahuila (Sierra Coahuilón) and Nuevo León (Cerro Potosí); subalpine vegetation, commonly with *Pinus hartwegii* Lindl. and *P. culminicola* Andresen & Beaman, to pine-Douglas fir-oak woods, 3100-3600 m, Jun-Oct.

Additional specimens examined: MEXICO. Coahuila: Mpio. Arteaga, Sierra Coahuilón: 17 Jun 1991, *Hinton et al.* 21007 (TEX); ceja y ladera SE, 22 Jul 1985, *McDonald* 1727 (TEX); ladera S, 18 Jun 1985, *McDonald* 1507 (TEX). Nuevo León: Mpio. Galeana, Cerro Potosí: 27 Aug 1987, *Bogler & Atkins* 169 (TEX); E side, 16 Sep 1980, *Henrickson* 18593 (TEX); cima, 26 Oct 1984, *McDonald & Gómez* 1280 (TEX); cumbre, 26 Jul 1985, *McDonald* 1826 (TEX); summit in alpine meadow and edge of krumholz, 24 Jul 1977, *Wells & Nesom* 223 (LL).

Glandularia turneri, an endemic species of high elevations, is a conspicuous member of the flora where I have seen it on Cerro Potosí. The species is named for Dr. B.L. Turner in recognition of his own remarkable vantage point and broad perspective on the flora of northern México.

Glandularia turneri is closely related to *G. elegans* (Kunth) Umber (see details below), although it is immediately different in its glabrous leaves with linear lobes and its short corollas. Umber (1979) apparently saw no specimens of *G. turneri*, judging from his distribution maps of both varieties of *G. elegans*, neither of which showed any records from Cerro Potosí or Sierra Coahuilón. The bicentric geographic distribution of the new species (Map 1) is similar to numerous other alpine and subalpine endemic species known from northeastern México (McDonald 1990, in press), which are restricted to the high peaks east of Saltillo and to Cerro Potosí in northcentral Nuevo León. The next area of high elevation to the south, the Peña Nevada area along the border of Nuevo León and Tamaulipas, harbors a number of floristic elements that are intimately related to those northward. *Glandularia turneri*, however, has not been found on Peña Nevada, but typical *G. elegans* is abundant there (common between ca. 2500 and 3500 meters in elevation).



Map 1. Distribution of *Glandularia elegans*. Particularly in eastern Mexico, one symbol often represents numerous collections. The records for Veracruz are added from Gibson and Nee (1984). Regions of populations with glandular floral bracts and calyces are circled. Inset shows distribution of *Glandularia turneri*.

In the same areas where *Glandularia turneri* occurs, but mostly at somewhat lower elevations, typical *G. elegans* is also found (Map 1). The type of *G. elegans* var. *asperata* Perry (see below) also is from this area. *Glandularia elegans* has been collected in the area near Sierra Coahuilón primarily at 2100-2600 meters (e.g., Villarreal 3781-TEX) and at 2200-2700 meters on the lower slopes of Cerro Potosí (e.g., Henrickson 18551-TEX, Hinton *et al.* 18515-TEX). Hinton 21007 (TEX), collected on Sierra Coahuilón at 3100 m, also is *G. elegans*, although it shows some evidence of genetic influence by *G. turneri*. Two specimens appear to represent intermediates: Carranza & More 114 (TEX), collected in Mpio. Arteaga, Coahuila, at 2300 m; Wells & Nesom 216 (TEX), collected at 2800 m on the east slope of Cerro Potosí.

The differences between *Glandularia turneri* and *G. elegans* are summarized in the following contrast:

1. Leaves noticeably thickened, glabrous to glabrate, bipinnatifid with narrowly linear lobes; calyces 7-9 mm long, including the lobes; corollas 9-10 mm long, the tube 1-4 mm longer than the calyx. *G. turneri*
1. Leaves relatively thin, moderately hispid with ascending-spreading hairs, margins coarsely serrate to incised, commonly bipinnatifid with lanceolate to oblanceolate lobes; calyces 8-13 mm long, including the lobes; corollas 15-25 mm long, the tube (6-)7-9(-12) mm longer than the calyx. *G. elegans*

A suite of features shared by *Glandularia elegans* and *G. turneri* may indicate a close relationship with several other Mexican and North American species with similar morphology: cylindrical nutlets with a relatively narrow, apically rounded commissure not reaching the top of the nutlet, stipitate glandular calyces, corolla tubes protruding well beyond the calyces, and large flowers (the corollas 9-20 mm wide). *Glandularia canadensis* (L.) Nutt., *G. maritima* (Small) Small, *G. bipinnatifida* (Nutt.) Nutt., and *G. wrightii* (A. Gray) Umber also are characterized by these features. The relationship between the widespread *G. canadensis* and its probable derivative, the narrowly endemic *G. maritima*, may be analogous to that between *G. elegans* and *G. turneri*. It is a reasonable hypothesis to consider the latter derived from *G. elegans*. Both of the putatively derivative species have thickened leaves with highly reduced vestiture.

Variation in *Glandularia elegans*

Glandularia elegans was treated by Perry (1933) within *Verbena* sect. *Glandularia* (Gmelin) Schauer as one species with two varieties. Umber (1979), who

elevated the North American (including Mexican) species of sect. *Glandularia* to generic rank, followed Perry's treatment in recognizing both varieties of *G. elegans*, although his concepts of the two taxa were somewhat different (see below).

Perry's distinction between var. *elegans* and var. *asperata*:

1. Plants prostrate-decumbent; spikes few flowered. var. *elegans*
1. Plants ascending, decumbent only at base; spikes many flowered; calyx teeth "a little longer than [var. *elegans*]." var. *asperata*

Umber's distinction between var. *elegans* and var. *asperata* added a degree of complexity to that of Perry:

1. Inflorescence few flowered with usually no more than about 20 flowers; stems decumbent, weak, trailing; calyx often purple in the upper part, with many long, glandular hairs having a purple capitate gland.
..... var. *elegans*
1. Inflorescence many flowered with usually 40-200 flowers; stems prostrate to ascending; calyx usually not pigmented, eglandular or with glandular hairs but lacking glandular hairs with a purple capitate gland.
..... var. *asperata*

Umber (1979) mapped these two varieties as broadly sympatric in the southern part of their ranges, with var. *asperata* extending further to the northwest and to the southeast than var. *elegans*. I cannot confirm the existence of any such consistent, large scale geographic pattern to the occurrence of plants that might show such an integrated constellation of morphological features. The habit of plants of *Glandularia elegans* is particularly variable, as well as the size and compaction of the inflorescence. Within the range, however, of what is recognized here as the single taxon *G. elegans*, there are smaller enclaves of recognizable variants, usually marked by a single character. Populations with stipitate glandular calyces and floral bracts occur in several separate areas throughout the range (shown in Map 1). Similarly, in the mountains between Cd. San Luis Potosí and Río Verde, the plants are distinctive in their linear-lanceolate floral bracts nearly equaling the calyx length; in northern Oaxaca and adjacent Guerrero, the plants tend to produce leaves that are deltate and smaller than elsewhere in the range. Some of these population systems might ultimately be given names, but all can conveniently be informally pointed out within a single taxon. Gibson & Nee (1984) recently came to the same conclusion and included var. *asperata* only as a synonym of

G. elegans (as *Verbena elegans* Kunth). The pattern of variation within the species perhaps reflects the occurrence of polyploidy and apomixis, which is known to exist within North American *Glandularia* (Umber 1979).

Glandularia elegans (Kunth) Umber, Syst. Bot. 4:94. 1979. BASIONYM: *Verbena elegans* Kunth, Nov. Gen. Sp. 2 [quarto]:273; 2 [folio]:220. 1818. TYPE: MEXICO. Hidalgo: Moran, May-Jun 1803, *Humboldt & Bonpland 4063* (P-HBK fiche! photo-GH!; B-Willd. Herb. photo-GH, photo-MO!). *Verbena canadensis* (L.) Britt. subsp. *elegans* (Kunth) Thell., Fl. Advent. de Montpellier 428. 1912. *Verbena moranensis* Willd. ex Spreng., Syst. Veg. 2:750. 1825 [cited as synonym of *Verbena elegans*].

Verbena elegans Kunth var. *asperata* Perry, Ann. Missouri Bot. Gard. 20:319. 1933. TYPE: MEXICO. Coahuila: San Antonio, 31 Aug 1818, J. Gregg 355 (HOLOTYPE: MO!).

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NEW NAMES AND COMBINATIONS IN NEW WORLD *WEDELIA*
(ASTERACEAE, HELIANTHEAE)

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ABSTRACT

Evaluation of the characters that supposedly separate the genus *Aspilia* from *Wedelia* are briefly reviewed. It is concluded that *Aspilia* cannot be meaningfully separated from *Wedelia*, consequently the South American species of *Aspilia* are transferred to *Wedelia*, much as current workers have accorded the North American species of *Aspilia*. It is likely that most of the African species described as *Aspilia* also should be treated within *Wedelia*, but transfer of these taxa are left to taxonomists familiar with the African taxa. Altogether, 78 new specific combinations or names have resulted from the transfer of South American *Aspilia* into *Wedelia*.

KEY WORDS: *Aspilia*, *Wedelia*, Asteraceae, Heliantheae

Robinson (1984), working with the South American species of *Wedelia* Jacq. *nom. conserv.* and *Aspilia*, notes that the generic lines between these taxa are difficult to draw. Nevertheless, he retains both, emphasizing the supposedly fertile rays in *Wedelia* and, while emphasizing that the currently drawn lines separating *Wedelia* from *Aspilia* (*Wedelia* having mostly sterile ray florets) are artificial, Robinson contends that *Aspilia* (at least in Brazil) "shows a remarkable tendency to contain all the species in the *Wedelia-Aspilia* complex that have distinct fiber sheaths on the veins of the disk corollas and have black anther appendages ..."

My own studies of the North American elements of the "*Wedelia-Aspilia*" generic complex, as well as those from South America and elsewhere, has convinced me that there is no clear distinction between *Wedelia* and *Aspilia*.

McVaugh (1984) also found it difficult to distinguish between *Wedelia* and *Aspilia* noting that:

The distinction between *Wedelia* and the genus *Aspilia* Thouars is not always a clear one. The latter is said to include 125 species in the tropics of both hemispheres, especially in Africa and in Brazil. Traditionally *Wedelia* has been circumscribed so as to include species with fertile rays, obtusely angled achenes, and cup-shaped awnless or short awned pappus. In *Aspilia* the rays are neuter, or pistillate but sterile. Even in species with normally fertile rays, however, one may find some or many ray-flowers with undeveloped achenes. Another group with many similarities to the *Wedelia*-complex is the genus *Zezmenia* Llave, in which the achenes are often winged, with a neck separating the body from the awns and pappus (the latter as in *Wedelia*).

Strother (1991, p. 8) also implicitly recognized the difficulty in arriving at a satisfactory dividing line between *Wedelia* and *Aspilia* by including all of the hitherto recognized North American species of *Aspilia* into *Wedelia*. He further noted (p. 40) that "some, perhaps all, African species named in *Aspilia* may also belong within my circumscription of *Wedelia*." This in spite of the fact that he separated out of *Wedelia* the long recognized *W. trilobata* (L.) A. Hitch., as the type of his new genus *Complaya* Strother, which he believed to be closer to the genera *Lipochaeta* and *Wallastonia*, which appears to be the case.

Strother (1991) did not comment upon the likelihood that most of the South American species of *Aspilia* are, in fact, wedelias. Most of these that I have examined clearly fall within the descriptive boundaries of *Wedelia* sensu Strother. In short, as with the North American species of *Wedelia*, which may have fertile or sterile ray florets (pistillate or neuter, respectively), distinct or indistinct fiber sheaths in the corolla throats, yellow or purple anther appendages, the South American species, at least some if not many of them, vary in the characters concerned. Continued attempts to distinguish between *Wedelia* and *Aspilia*, as focused upon by Robinson (1984), might ultimately provide new insights into species groups and their relationships within the *Wedelia-Aspilia* complex, but the two taxa are, in my opinion, so inextricably linked that the systematic community would be better served, both phyletically and by nomenclature, in accepting but a single genus, *Wedelia*.

As a result of the information outlined above, I unhesitatingly propose the following name changes for the South American species. I have not attempted to do this for the African species since I do not have sufficient material at my disposal to attempt such an undertaking. This should be left to a worker specializing on that region. As this paper was being readied for publication, Robinson (1992) transferred the type species of *Aspilia* (*A. thouarsii* A. DC., from Africa) thus formalizing submergence of these genera.

Wedelia andersonii* (H. Robins.) B. Turner, comb. nov. BASIONYM: *As-

pilia andersonii H. Robins., *Phytologia* 55:415. 1984.

Wedelia angustifolia (Gardn.) B. Turner, *comb. nov.* BASIONYM: *Oyedaea angustifolia* Gardn., *London J. Bot.* 7:293. 1848.

Wedelia apensis (Chod.) B. Turner, *comb. nov.* BASIONYM: *Aspilia apensis* Chod., *Bull. Herb. Boiss., ser. II*, 3:721. 1903.

Wedelia asperrima (Gardn.) B. Turner, *comb. nov.* BASIONYM: *Viguiera asperrima* Gardn., *London J. Bot.* 7:401. 1848.

Wedelia aspilioides (Baker) B. Turner, *comb. nov.* BASIONYM: *Viguiera aspilioides* Baker, *Mart. Fl. Bras.* 6:228. 1884.

Wedelia attenuata (Gardn.) B. Turner, *comb. nov.* BASIONYM: *Viguiera attenuata* Gardn., *London J. Bot.* 7:400. 1848.

Wedelia aurantiaca (Griseb.) B. Turner, *comb. nov.* BASIONYM: *Aspilia aurantiaca* Griseb., *Goett. Abh.* 19:183. 1874.

Wedelia avilensis (Aristeg. & Steyerl.) B. Turner, *comb. nov.* BASIONYM: *Aspilia avilensis* Aristeg. & Steyerl., *Fl. Venezuelensis* 10:552. 1964.

Wedelia bakeri B. Turner, *nom. nov.* BASIONYM: *Aspilia gracilis* Baker, *Mart. Fl. Bras.* 6:198. 1884. Non *Wedelia gracilis* Rich., *Pers. Syn. Fl.* 2:490. 1807.

Wedelia bishoplecta (H. Robins.) B. Turner, *comb. nov.* BASIONYM: *Aspilia bishoplecta* H. Robins., *Phytologia* 56:264. 1984.

Wedelia bonplandiana (Gardn.) B. Turner, *comb. nov.* BASIONYM: *Viguiera bonplandiana* Gardn., *London J. Bot.* 7:399. 1848.

Wedelia burchellii (Baker) B. Turner, *comb. nov.* BASIONYM: *Aspilia burchellii* Baker, *Mart. Fl. Bras.* 6:194. 1884.

Wedelia cachimboensis (H. Robins.) B. Turner, *comb. nov.* BASIONYM: *Aspilia cachimboensis* H. Robins., *Phytologia* 58:245. 1985.

Wedelia callosa (Chod.) B. Turner, *comb. nov.* BASIONYM: *Aspilia callosa* Chod., *Bull. Herb. Boiss., ser. II*, 3:720. 1903.

Wedelia camporum (Chod.) B. Turner, *comb. nov.* BASIONYM: *Aspilia camporum* Chod., *Bull. Herb. Boiss., ser. II*, 3:720. 1903.

Wedelia cardenasii (H. Robins.) B. Turner, *comb. nov.* BASIONYM: *Aspilia cardenasii* H. Robins., *Phytologia* 56:265. 1984.

- Wedelia cuyabensis** (Malme) B. Turner, *comb. nov.* BASIONYM: *Aspilia cuyabensis* Malme, Ark. Bot. 24:44. 1932.
- Wedelia cylindrocephala** (H. Robins.) B. Turner, *comb. nov.* BASIONYM: *Aspilia cylindrocephala* H. Robins., Phytologia 56:266. 1984.
- Wedelia diffusiflora** (H. Robins.) B. Turner, *comb. nov.* BASIONYM: *Aspilia diffusiflora* H. Robins., Phytologia 56:416. 1984.
- Wedelia ecliptaefolia** (DC.) B. Turner, *comb. nov.* BASIONYM: *Leighia ecliptaefolia* DC., Prodr. 5:583. 1836.
- Wedelia elata** (Pilger) B. Turner, *comb. nov.* BASIONYM: *Aspilia elata* Pilger, Bot. Jahrb. Syst. 30:203. 1901.
- Wedelia elliptica** (DC.) B. Turner, *comb. nov.* BASIONYM: *Anomostephium ellipticum* DC., Prodr. 5:560. 1836.
- Wedelia epascopolis** (H. Robins.) B. Turner, *comb. nov.* BASIONYM: *Aspilia epascopolis* H. Robins., Phytologia 54:55. 1983.
- Wedelia floribunda** (Gardn.) B. Turner, *comb. nov.* BASIONYM: *Viguiera floribunda* Gardn., London J. Bot. 7:401. 1848.
- Wedelia foliacea** (Spreng.) B. Turner, *comb. nov.* BASIONYM: *Viguiera foliacea* Spreng., Syst. 3:616. 1826.
- Wedelia frioana** B. Turner, *nom. nov.* BASIONYM: *Aspilia reticulata* Baker, Mart. Fl. Bras. 6:202. 1884. Not *Wedelia reticulata* A. DC., Prod. 5:540. 1836.
- Wedelia frustrata** B. Turner, *nom. nov.* BASIONYM: *Gymnopsis fruticosa* Gardn., London J. Bot. 7:391. 1848. Not *Wedelia fruticosa* Jacq. 1760.
- Wedelia gardneri** B. Turner, *nom. nov.* BASIONYM: *Aspilia asperrima* Baker, Mart. Fl. Bras. 6:200. 1884. Not *Wedelia asperrima* Benth., Austral. 3:539. 1867.
- Wedelia glabra** (Gardn.) B. Turner, *comb. nov.* BASIONYM: *Viguiera glabra* Gardn., London J. Bot. 7:398. 1848.
- Wedelia hassleriana** (Chod.) B. Turner, *comb. nov.* BASIONYM: *Aspilia hassleriana* Chod., Bull. Herb. Boiss., ser. II, 2:391. 1902.
- Wedelia heringeriana** (H. Robins.) B. Turner, *comb. nov.* BASIONYM: *Aspilia heringeriana* H. Robins., Phytologia 56:267. 1984.

- Wedelia hirsuta** (Gardn.) B. Turner, *comb. nov.* BASIONYM: *Viguiera hirsuta* Gardn., *Mart. Fl. Bras.* 6:397. 1884.
- Wedelia hispidantha** (H. Robins.) B. Turner, *comb. nov.* BASIONYM: *Aspilium hispidantha* H. Robins., *Phytologia* 56:268. 1984.
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UN REGISTRO NUEVO PARA LA FLORA DE VENEZUELA: *LYCIANTHES*
HOLOCALYX BITTER (SOLANACEAE)

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ABSTRACT

A new record of Solanaceae for the Venezuelan flora, *Lycianthes holocalyx* Bitter, is reported from the states of Mérida and Táchira. Taxonomic and morphologic information is included.

KEY WORDS: Solanaceae, *Lycianthes*, taxonomy, Venezuela, South America

RESUMEN

Un registro nuevo de Solanaceae para la flora de Venezuela (*Lycianthes holocalyx* Bitter), es reportado en los estados de Mérida y Táchira. Se incluye información taxonomica y morfologica.

PALABRAS CLAVE: Solanaceae, *Lycianthes*, taxonomía, Venezuela, America del Sur

En el curso de las investigaciones relacionadas con el estudio de la familia Solanaceae para la Flora de Venezuela, se ha podido diferenciar la especie *Lycianthes holocalyx* Bitter, la cual fue originalmente descrita del Ecuador en 1920, posteriormente señalada para Perú por C.V. Morton en 1944 y por J.F. Macbride en 1962. Ahora se registra para Venezuela, habitando en la región andina, estados Mérida y Táchira, a elevaciones entre 2150 y 2745 ms.m.

Lycianthes holocalyx Bitter, Abh. Naturwiss. Vereine Bremen 24:459. 1920.
HOLOTIPO: ECUADOR. in Tropenwäldern bei Santo Domingo, Sodiro
N. 114/38 (B [¿destruido?]) FOTO: F (no. 2579).

Arbusto 1-2 m alto, tallos adultos glabrescentes, los jóvenes densamente pubescentes, tricomas simples, uniseriados, paucicelulares, entrenudos 2.0-5.5 cm de largo, hojas membranáceas, geminadas, asimétricas, las más grandes del par con pecíolo de 0.8-2.0 cm largo, lámina 10.-19 cm de largo y 3-7 cm de ancho, oblicua, angosto-elíptica o levemente más ancha, cuneadas en la base y allí el limbo sito a diferentes alturas en el pecíolo, la parte media ancha, el ápice angosto-acuminado; las más pequeñas del par con pecíolo 0.4-1.0 cm de largo, lámina 5-8 cm de largo y 2-3 cm de ancho, oblicua, angosto-elíptica o levemente más ancha, decurrente en el pecíolo, el ápice angosto-acuminado; el haz verde oscuro y con tricomas simples, densos o dispersos, aplicados; el envés verde pálido y con pubescencia densa especialmente a lo largo de la nervadura principal y laterales, éstas en número de 7-11 pares, ascendentes. Inflorescencias umbeliformes, sésiles, axilares, 5-16 flores pediceladas, pedicelos 0.6-1.8 cm de largo, con pelos densos o dispersos. Cáliz densamente pubescente por la parte externa, internamente con glándulas dispersas diminutas, 2.0-3.2 mm de largo, margen trunco, entero, 5 angulado, 10 nervado, 4(-5) nervios rematando en porciones más densamente pubescentes. Corola blanca, esteliforme, 5 lobada, 7-8 mm de largo, 10-16 mm de diámetro, tubo 0.5-1.0 mm de largo, lóbulos 6.0-7.5 mm de largo, con ápice cuculado y pubescencia densa, laxo pubescentes por fuera, glabros por dentro, reflejos en antesis. Estambres 5, filamentos iguales, 2.0-2.9 mm de largo, glabros, anteras 2.0-2.5 mm de largo, con poros apicales. Ovario glabro, 1.2-1.5 mm de largo y 0.8-1.3 mm de diámetro, ovoide, estilo 6 mm de largo, glabro, porción estigmática capitiforme. Fruto una baya con cáliz persistente y lobado, transverso ancho ovoide, 5.5-9.0 mm de largo, 2 locular, multiovulada, pericarpo rojo, carnoso y con la superficie lisa. Semillas en número de 13-52, pequeñas de 1.0-1.7 mm en su eje más largo, algo aplanadas, de forma subpiramidal, suborbicular o algo irregulares, con hilo en el extremo o vértice más achatado, superficie irregularmente retículo-foveolada, color castaño-rojizo. Cubierta seminal formada por dos capas: la capa externa uniestrata, constituida por esclereidas con paredes anticlinales y periclinales internas engrosadas, paredes periclinales externas delgadas y frágiles, la capa interna delgada formada por células aplastadas, a veces inconspicua. Endosperma sólido de paredes ligeramente engrosadas, con grasa abundante y almidón ausente.

Esta especie, según la clasificación de Bitter, está ubicada en la sección *Simplicipila* Bitter, serie *Holocalyx* Bitter y se destaca por presentar cáliz trunco, sin dientes y la pubescencia representada por tricomas rectos, aplicados y agudos, de 1.0-1.5 mm largo, localizados en tallos jóvenes, en el haz y envés de la hoja, en la cara externa del cáliz y de la corola.

Se localiza en selvas nubladas siempre verdes, en el estrato medio de la comunidad.

ESPECIMENES EXAMINADOS: Estado Mérida: Planta de 2.5 m, pétalos blancos, anteras amarillas, frutos rojos al madurar; Monte Zerpa, Dtto. Li-



Figura 1. *Lycianthes holocalyx* Bitter. a) Sumidad de la planta; b) Sección anterior de la flor mostrando su interior; c) Vista externa del cáliz. Basada en A. Quintero 2173 (MER).

bertador (flores y frutos), 7-II-1984, *Teresa Schwarzkopf 12* (MY); Shrub 5 feet tall, corolla white, anther golden, pedicel and calyx pale green, leaves membranaceous, dark green above, pale green below; rich steep northwest and northeast facing forested slopes above "La Isla", above Tabay, altitude 2285-2745 ms.m. (flores y frutos), 18-V-1944, *Julian A. Steyermark 56628* (F,MY,VEN); Arbol 2 m alto, flores cremosas, frutos inmaduros; Municipio Tabay, bosque nublado de La Mucuy, vía laguna de La Coromoto, 9° 54' N, 71° 03' O, 2375 ms.m. (flores y frutos), 2-II-1980, *Anibal Castillo 1930* (MY); Arbusto ± 3 m alto, con 3-4 tallos que salen de la base, corola blanca de 12 mm diámetro, lóbulos patentes en antesis, reflejos post antesis, con hasta 8 flores axilares; creciendo en lugar sombreado en Parque Nacional Sierra Nevada, vía La Mucuy, 1900 ms.m. (flores y frutos), 16-VIII-1991, *Carmen Benítez de Rojas, Thirza Ruíz, Roberto Villafañe, y Mayda Ruiz 4185* (F,MO,MY,NY,VEN); Arbusto 0.5 m de alto, frutos verdes, Parque Nacional Sierra Nevada, Tabay, en camino cerca de la Estación de Truchicultura, La Mucuy, 08° 36' N, 71° 01' O, 2300 ms.m. (frutos), 16-XI-1990, *Gladys Rodríguez 770* (MY,VEN); Tabay, Mucunután, selva pendiente y húmeda, 2000-2500 m (frutos), 17-X-1930, *Gehriger 577a* (VEN). Estado Táchira: Frútice, El Cobre, Páramo del Zumbador, alt. 2500-2600 ms.m. (flores y frutos), 1-XII-1977, *Anselmo Quintero 2173* (MER); Shrub 1 m tall, leaves membranaceous, pale dull green above, pale gray green below, wet forested slopes along Quebrada Agua Azul, over slate-shale substrate, south of El Reposo, 14 km SE of Delicias, lat. 7° 31' N, long. 72° 24' W, alt. 2150-2300 ms.m. (frutos), 22-23-VII-1979, *Julian A. Steyermark y Ronald Leisner 118386* (VEN); Shrub 2 m tall, leaves membranaceous, dull green above, dull pale green below, pedicel olive green as is fruit, wet forested slopes along Quebrada Agua Azul, over slate-shale substrate, south of El Reposo, 14 km SE of Delicias, lat. 7° 31' N, long. 72° 24' W, alt. 2150-2300 ms.m. (frutos), 22-23-VII-1979, *Julian A. Steyermark y Ronald Leisner 118330* (VEN); Arbusto de 3 a 5 m, frutos bayas rojo-cereza, muy abundante en estrato medio de comunidad forestal siempre verde densa de medianas alturas (18 a 22 m), presente en naciente de aguas, Munc. Jáuregui, Quebrada Acueducto, entre El Llanito y Río Arriba, 4 km sur de El Cobre, 8° 01' N, 72° 03' O, 2500 ms.m. (frutos), 5-VIII-1990, *M. Pietrangeli 1331* (VEN); Hierba de unos 50 cm, flores blancas, estambres amarillos, poco frecuente en orillas de quebrada en bosque siempreverde denso de alturas medias (15 a 18 m), Munc. Jáuregui, 1 km sureste Alcabala Páramo El Zumbador, 7 km pueblo El Cobre, 7° 58' N, 72° 04' O, 2750 ms.m. (flores y frutos), 11-X-1989, *M. Pietrangeli 388* (VEN).

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